REMARKS/ARGUMENTS

Introduction:

Claims 43-54 are new. Claims 2-54 are now pending in the application. Applicants respectfully request reexamination and reconsideration of the application.

Rejection Under 35 USC 101:

Claims 2, 12, 18, 22, 32, and 39 have been rejected under 35 USC 101 as allegedly being drawn to non-statutory subject matter. Applicant respectfully traverses this rejection.

First, claims 2, 12, and 18 are directed to a "computer," which is a machine—not an abstract idea. Therefore, the rejection is simply not applicable to claims 2, 12, and 18. Claims 22, 32, and 39 are directed to a "computer readable media comprising software for causing said computer to perform a method for finding a path within a routing space from a start location to an end location." Such a media is a "product"—not an abstract idea—and the rejection is also not applicable to claims 22, 32, and 39. For this reason alone, the claims are statutory and pass muster under 35 USC 101.

Second, each of the claims produces a useful, concrete, and tangible result. One of the examples in MPEP 2106, as quoted in the Office Action, identifies the transformation of data representing dollar amounts, even if just momentarily stored in a computer memory, as a useful, concrete and tangible result. (MPEP 2106.) Each of the pending claims transforms data representing a path through a routing space. Such a path can, for example, represent a path for traces or wiring in an electronics system (see Specification paragraph [0024]), which without question is useful. Moreover, as discussed above, each claim is directed to a "computer" or a "computer readable media comprising software for causing said computer to perform a method for finding a path within a routing space from a start location to an end location." As is well known in the field, it is impossible to operate a computer without storing in computer memory the data being operated on and transformed. It is thus impossible for the computer recited in claims 2, 12, and 18 or the method referred to in claims 22, 32, and 39 not to store in memory the path, and indeed, as discussed above, even momentarily storing transformed data is a concrete and tangible result. For at least these additional reasons, all pending claims are directed to statutory subject matter and pass muster under 35 USC 101.

For at least the foregoing reasons, Applicants request that the rejection under 35 USC 101 be withdrawn.

Non-Statutory Double Patenting Rejection

Claims 2, 12, 18, 22, 32, and 39 have been rejected under the non-statutory double patenting doctrine in view of US Patent No. 6,678,876 claims 2, 12, and 16. In response, Applicants will file a terminal disclaimer but would prefer to do so after all other issues regarding patentability have been resolved.

Rejection Under 35 USC 102:

Claims 2-42 were rejected under 35 USC 102, as allegedly being anticipated by US Publication No. US 2001/0038612 A1 to Vaughn et al. (Vaughn). Applicants respectfully traverse the rejection on the basis that Vaughn does not teach or suggest all the features of the claims.

Independent Claim 2 recites "means for creating an initial array of nodes within a routing space" and "adjusting means for adjusting said initial array of nodes . . . between at least a pair of obstacles in said routing space." Claim 2 also recites a "means" that selects a path "through said adjusted array of nodes." The computer of claim 2 thus selects a path through nodes already adjusted with respect to obstacles. The adjusted nodes thus provide possible path routes that avoid obstacles. Because the computer of claim 2 adjusts nodes with respect to obstacles and then selects a path through the ***adjusted*** nodes, the computer of claim 2 is able to route paths around obstacles very efficiently, the adjusted nodes providing guides for selecting a path around obstacles.

In contrast, as acknowledged in the Office Action, the only thing Vaughn adjusts are already created paths (i.e., "segments"). A segment is not a node but is a portion of a path, often consisting of connected nodes. Vaughn therefore does not adjust nodes but adjusts portions of the path as the path is being routed. Vaughn is therefore unlikely to function as efficiently as the computer of claim 2 because Vaughn first creates the paths, or at least portions of the paths (i.e., segments), and thereafter adjusts the already created segments around obstacles.

For at least the foregoing reasons, independent claim 2 is patentable over Vaughn.

Independent claims 18, 22, and 39 recite similar features to one or more of the features discussed above with respect to claim 2. At least for these reasons, independent claims 18, 22, and 39 are also patentable over Vaughn.

Turning now to independent claim 12, that claim recites "an array of linked nodes" and further describes the array as "including a source node, a destination node, and a plurality of intermediate nodes." Claim 12 further recites "iteratively creating a plurality of partial paths" each extending to an intermediate node in the array, and "means for determining a routing cost of each partial path." In rejecting claim 12, the PTO relied on minimum spanning tree analysis illustrated in Figure 5 of Vaughn. In Figure 5, elements 230, 232, and 234 are connection points defined in a net list. Vaughn's minimum spanning tree analysis determines and stores the shortest path connecting all three connection points. Later, those connection paths are broken into orthogonal line segments as shown in Figure 6. (Vaughn paragraph [0113].)

Vaughn's minimum spanning tree analysis lacks several features recited in claim 12.

For example, because there are only three connection points 230, 232, 234, there are simply not enough connection points for there to be a source node, a destination node, and ***a plurality of*** intermediate nodes, as recited in claim 12.

As another example, connection points 230, 232, 234 are not linked and thus cannot be "linked nodes" as recited in claim 12. Applicants note that, if the PTO deems path segments A1, A2, B1, B2, C1, and C2 links, then there is nothing in the minimum spanning analysis shown in Figure 5 the PTO could equate with the partial paths recited in claim 12.

As still another example, the paths that connect the three connection points 230, 232, 234 can end on or pass through any of the connection points, and therefore none of the connection points 23, 232, 234 is a source, destination, or intermediate node. This is because Vaughn's minimum spanning tree analysis does not care where the selected connection paths starts or ends. As can be seen in Figure 5, in one possible path consisting of segments C1 and C2, the path ends at 230 and 234 and passes through 232. Another possible path consisting of segments B1 and B2, the path ends at 230 and 232 and passes through 234. Likewise, another possible path consisting of segments A1 and A1 ends at 232 and 230 and passes through 234. Thus, none of the nodes is a source node, a destination node, or an intermediate node.

As yet another example, claim 12 recites "means for discarding all of said partial paths that extend to one intermediate node except the partial path with the lowest routing cost if more

than one partial path extends to said one intermediate node." The possible paths shown in Figure 5—i.e., the path consisting of segments A1 and A2, the path consisting of segments B1 and B2, and the path consisting of segments C1 and C2—do not extend to the same intermediate node. Vaughn's minimum spanning tree analysis illustrated in Figure 5 thus does not "[discard] all of said partial paths that extend to one intermediate node" except for one path.

For at least the foregoing reasons, independent claim 12 is patentable over Vaughn.

Independent claim 32 recites features that are similar to at least some of the features discussed above with respect to claim 12. For at least this reason, independent claim 32 is patentable over Vaughn.

Claims 3-11, 13-17, 19-21, 23-31, 33-38 and 40-42 as well as new claims 43-54 depend directly or indirectly from the independent claims discussed above and should be allowable at least for the same reasons discussed above.

In view of the foregoing, Applicants submit that all of the claims are allowable and the application is in condition for allowance. If at any time the Examiner believes that a discussion with Applicants' attorney would be helpful, the Examiner is invited to contact the undersigned at (801) 536-6763.

Respectfully submitted,

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